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NPIC/TSSG/DED-1704-69  
2 July 1969

MEMORANDUM FOR THE RECORD

SUBJECT: The Advanced 918 Light Table Prototype

25X1 1. The Advanced 918 Light Table Prototype was received from [ ] on 16 April 1969. The table was subsequently tested and found to be below specifications in a few areas. The major one being in the manual drive system. The specifications require that the manual drive system be bi-directional; in other words, when a single handwheel is turned in one direction, film moves one way and when the same handwheel is turned in the opposite direction, the film moves the other way. This specification also states that the manual drive will have an approximate 1:1 ratio between the handwheels and the spools and that the drive system shall provide very smooth winding and unwinding of film from either spool. The drive must be a low friction system incorporating both inertia damping anti-backlash control. [ ] table provides all features required in the specifications but the smooth operation is not there.

25X1 2. Friction in the manual drive system reduces the mechanical efficiency to about 20%. This is without any tension on the film at all. The inertia damping and anti-backlash control are produced by applying power to the motor opposite the takeup spool. In theory, this system is good. However, with minimum tensions set on the control, the force required to operate the manual system ranges from 4-7 pounds. The PI is use to working with [ ] Light Tables which require a force of about 1/2 to 1 pound; thus, the force required to turn the cranks is excessive on the [ ] table.

25X1 3. In the [ ] table, oscillations are created in the tensioning systems when force applied to the film crank handles is less than that applied by the tension motor in the opposite direction. For these reasons, the [ ] Advanced 918 Light Table Prototype was deemed unacceptable and was not given to the PIs for evaluation.

25X1 4. [ ] was notified of the unacceptability of their light table prototype and they stated that they were willing to do anything they could to make the table acceptable. Discussions with the [ ] engineers have revealed that several things could and should be done to the manual drive system to make it more acceptable. First of all, the tension

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GROUP 1  
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25X1 could be reduced and this would reduce the force required to turn the film spools. According to the [ ] engineers, this would also eliminate the oscillations in the tensioning system. The engineers did not feel that they could do much to improve the efficiency of the mechanical system. The bi-directional system requires use of clutches, long power trains, switches, etc. which all add friction to the system. It appears that at its best, the manual system would still require two to four pounds of force to turn the film. It was, therefore, conceded that the manual drive system could never be made completely acceptable.

25X1 5. [ ] has been requested to remove the bi-directional manual system, to add handwheels to the ends of the spools (in the power mode when the film is not moving, the handwheels can be used as an over-ride to move the film in either direction), and to improve other deficiencies in the light table. [ ] has agreed to make these changes at no additional cost and the table was shipped back to [ ]

25X1

TSSG/DED/SDB

Distribution:

- Orig - DED Rt & File
- 1 - TSSG/DED Chrono
- 1 - TSSG/DED/SDB Chrono

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